

REMARKS

The following Remarks are a full and complete response to the Office Action dated July 17, 2003. Claims 1, 2, and 4 are pending in this application. In the outstanding Office Action, claims 1, 2, and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's Admitted Prior Art in view of Shirakawa et al. (GB/2,302,451). In making this rejection, the Office Action asserts that the combination of these two references teaches and/or suggests each and every element of the claimed invention. The Office Action also asserts that the combination of these two references would be obvious to one of ordinary skill in the art. Applicant respectfully disagrees.

Claim 1, as amended, recites a mount structure for a thermal fuse on a circuit board. This structure includes a circuit board having a first surface where a predetermined circuit is formed and a second surface. A through opening is provided in the circuit board. The through opening joining the first and second surfaces. An electronic component is attached to the first surface of the circuit board to extend across the through opening. A thermal fuse is provided on the second surface of the circuit board to enter the through opening. This thermal fuse responds to the temperature of the electronic component via a heat-conducting insulating member filling the through opening for breaking the predetermined circuit. A through hole is provided in the circuit board. The thermal fuse is electrically connected to the predetermined circuit via the through hole. The through opening and the heat-conducting insulating member contained therein are free from electrical conductors in the space between the electronic component and the thermal fuse.

Applicant's Admitted Prior Art illustrated in Figures 3A and 3B show that it was well known in the art at the time the invention was made to mount a thermal fuse 34 on the same surface of a circuit board 31 as electronic components 32. Thermal fuse 34 in these figures is thermally connected to electronic devices 32 with a heat-conducting insulating material such as silicon resin.

Applicant's Admitted Prior Art fails to teach the claimed invention since there is no teaching of the through opening with the thermal fuse and the electric components being arranged across the opening and on opposite sides of the circuit board. The Office Action cites Shirakawa as curing the deficiencies in Applicant's Admitted Prior Art.

Shirakawa discloses a multi-chip module with an enhanced degree of integration. As shown in Figs. 1 and 3, a recess 8 is located on one side of a laminate wiring board 3 having a predetermined thickness. A semiconductor device 2 is mounted in the recess 8 and connected to the wiring board 3 with wires 6. The wires 6 and device 2 are sealed by resin 4. Another device 1 is mounted to cover the resin 4. Thus, wires 6 are located in resin 4 between device 1 and device 2.

In Shirakawa, when the wiring board 3 is too thin and the recess cannot be formed in the wiring board, a through hole 9 is formed in the wiring board 3 as shown in Fig. 2. In this case, the device 2 is mounted in the thorough hole 9 by being vacuum-sucked from below (see page 7, lines 22-24 of Shirakawa). In this mounting structure, wires 6 connect device 2 to the first side of wiring board 3. This side of wiring board 3 is the same side of wiring board 3 to which device 1 is mounted. Therefore, wires 6 are located in resin 4 between device 1 and device 2.

Accordingly, the combination of Applicants Admitted Prior Art and Shirakawa would mount the thermal fuse in the through hole 9 with the electrical connectors to the thermal fuse connected to the first surface at the wiring board and passing between the electronic component and the thermal fuse. In contrast, Applicants claims recite that the through opening and the heat-conducting insulating member contained therein are free from electrical conductors in the space between the electronic component and the thermal fuse.

Therefore, the combination of Shirakawa and the Applicant's admitted prior art fails to disclose and/or suggest the claimed invention. Specifically, the combination of these references fail to teach and/or suggest that the through opening and the heat-conducting insulating member contained therein are free from electrical conductors in the space between the electrical component and the thermal fuse. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1, 2, and 4 under 35 U.S.C. § 103(a).


CONCLUSION

Applicant's' remarks have overcome the rejection set forth in the Office Action dated July 17, 2003. Specifically, Applicant's remarks have distinguished claims 1, 2, and 4 from the combination of Applicant's Admitted Prior Art and Shirakawa, and thus overcome the rejection of these claims under 35 U.S.C. § 103(a). Accordingly, claims 1, 2, and 4 are in condition for allowance. Therefore, Applicant respectfully requests consideration and allowance of claims 1, 2, and 4.

Applicant submits that the application is now in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicant respectfully requests that the Examiner contact the undersigned attorney by telephone if it is believed that such contact will expedite the prosecution of the application.

In the event that any additional fees are due with respect to the filing of this paper, the undersigned authorizes the Office to charge any additional fees to our Deposit Account No. 01-2300, making reference to Docket No. 100806-00001.

Respectfully submitted,



Rustan J. Hill
Registration No. 37,351

Customer No. 004372
ARENT FOX KINTNER PLOTKIN & KAHN, PLLC
1050 Connecticut Avenue, N.W.,
Suite 400
Washington, D.C. 20036-5339
Tel: (202) 857-6000
Fax: (202) 638-4810
RJH:td

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